

CLAIMS

- 1 1. A method of forming a mixed fiber mat, the method comprising:
 - 2 (a) forming a multi-layer mat from a first continuous strand glass fiber mat and a
 - 3 first layer of thermoplastic fibers; and
 - 4 (b) needle-punching the multi-layer mat to intertwine the fibers.
- 1 2. The method in accordance with claim 1, wherein the thermoplastic fibers further
- 2 comprise polypropylene fibers.
- 1 3. The method in accordance with claim 2, wherein the step of forming the multi-layer
- 2 mat further comprises disposing staple polypropylene fibers on a first side of the
- 3 continuous strand glass fiber mat.
- 1 4. The method in accordance with claim 3, wherein the step of forming the multi-layer
- 2 mat further comprises disposing staple polypropylene fibers on a second side of the
- 3 continuous strand glass fiber mat.
- 1 5. The method in accordance with claim 4, further comprising the step of forming at least
- 2 one additional layer.

1 6. The method in accordance with claim 3, wherein the step of forming the multi-layer
2 mat further comprises disposing a second continuous strand glass fiber mat on a side of
3 the first layer of polypropylene fibers that is opposite the first continuous strand glass
4 fiber mat.

1 7. The method in accordance with claim 3, wherein the step of forming the multi-layer
2 mat further comprises disposing a second glass fiber mat on a side of the first layer of
3 polypropylene fibers that is opposite the first continuous strand glass fiber mat.

1 8. The method in accordance with claim 3, wherein the step of forming the multi-layer
2 mat further comprises disposing a plurality of staple glass fibers on a side of the first
3 layer of polypropylene fibers that is opposite the first continuous strand glass fiber mat.

1 9. The method in accordance with claim 2, further comprising the steps of placing the
2 multi-layer mat in a mold at sufficient pressure and temperature to melt the
3 polypropylene fibers, and then cooling the multi-layer mat to a temperature sufficient to
4 harden the melted polypropylene fibers.

1 10. The mixed fiber mat producing according to the method of claim 1.

1 11. A mixed fiber mat comprising a first continuous strand glass fiber mat and a first
2 layer of thermoplastic fibers needle-punched together to intertwine the fibers.

1 12. The mixed fiber mat in accordance with claim 11, wherein the thermoplastic fibers
2 are staple polypropylene fibers.

1 13. The mixed fiber mat in accordance with claim 12, wherein the layer of staple
2 polypropylene fibers are disposed on a first side of the continuous strand glass fiber mat.

1 14. The mixed fiber mat in accordance with claim 13, further comprising staple
2 polypropylene fibers disposed on a second, opposite side of the continuous strand glass
3 fiber mat.

1 15. The mixed fiber mat in accordance with claim 14, further comprising at least one
2 additional fiber layer.

1 16. The mixed fiber mat in accordance with claim 13, further comprising a second
2 continuous strand glass fiber mat disposed on a side of the first layer of polypropylene
3 fibers that is opposite the first continuous strand glass fiber mat.

1 17. The mixed fiber mat in accordance with claim 13, further comprising a second glass
2 fiber mat disposed on a side of the first layer of polypropylene fibers that is opposite the
3 first continuous strand glass fiber mat.

1 18. The mixed fiber mat in accordance with claim 13, further comprising a plurality of
2 staple glass fibers disposed on a side of the first layer of polypropylene fibers that is
3 opposite the first continuous strand glass fiber mat.